

# Claims

[c1]

1. A spread spectrum communications system, comprising:

(A) a transmitter, said transmitter further comprising:

(1) a data source;

(2) a first multiplier/mixer spreading data from said data source with a first pseudo noise source;

(3) a second multiplier/mixer spreading data from said first mixer with a second pseudo noise source;

(4) an RF transmitter;

(B) a receiver, said receiver further comprising:

- (1) an RF receiver;
- (2) a first matched filter receiving data from said RF receiver;
- (3) a plurality of phase/frequency shifters, receiving a signal from said first matched filter;
- (4) a plurality of second matched filters receiving data from said plurality of phase/frequency shifters; and
- (5) an equalizer/decoder receiving signals from said plurality of phase/frequency shifters.

[c2]

- 2. A spread spectrum communications system, as recited in claim 1, wherein said first pseudo noise source provides a variable length code sequence.

[c3]

- 3. A spread spectrum communications system, as recited in claim 1, wherein said second pseudo noise source provides a fixed length code sequence.

[c4]

4. A spread spectrum communications system, as recited in claim 1, wherein said first multiplexer mixer spreads said data from said data source with a variable PN code.

[c5]

5. A spread spectrum communications system, as recited in claim 1, wherein said second multiplexer mixer spreads said data from said first mixer with a fixed length PN code.

[c6]

6. A spread spectrum communications system, as recited in claim 1, wherein said first matched filter further comprises a set of coefficients correlated to said second pseudo noise source.

[c7]

7. A spread spectrum communications system, as recited in claim 1, wherein said plurality of phase/frequency shifters are offset from each other by one or more degrees.

[c8]

8. A spread spectrum communications system, as recited in claim 1, wherein said second matched filters are correlated to said first pseudo noise source.

[c9]

9. A spread spectrum communications system, as recited in claim 1, wherein said first and said second pseudo noise sources may be scaled to longer or shorter fixed or variable code lengths to optimize variables such as connection quality, system complexity, overall implementation cost and service "classes" of devices.

[c10]

10. A spread spectrum communications system, as recited in claim 1, wherein said equalizer/decoder selects an advantageous set of signals from said received signals from said plurality of phase/frequency shifters.